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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,945	03/09/2007	Ulf Fredrik Jonsson	P18991-US1	2381

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ERICSSON INC.
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EXAMINER	
PREVAL, LIONEL	
ART UNIT	PAPER NUMBER
2475	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/598,945	JONSSON ET AL.	
	Examiner	Art Unit	
	LIONEL PREVAL	2475	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15,21-24 and 29-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15,21-24 and 29-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Davis *et al.*** (US 20050058118 A1).

Regarding **Claim** 15, **Davis *et al.*** teaches a method of providing multiple simultaneous services through a single broadband connection to an end user, (**Davis *et al.***, FIGs 7 - 13) said end user being connected to a core network through first and second independently tagged Virtual Local Area Network (VLAN) regions (**Davis *et al.***, Figs 7 - 13), said method comprising the steps of: implementing a VLAN Mapping Point at a border between the first and second VLAN regions (OLT, **Davis *et al.***, FIG. 11, box 710), wherein the first VLAN region is on a first side of the VLAN Mapping Point toward the end user, and the second VLAN region is on a second side of the VLAN Mapping Point toward the core network (the number of ports on the switch are divided into network-side ports and user-side ports, **Davis *et al.***, paragraph [0016], lines 7 - 12); receiving in the VLAN Mapping Point, an upstream traffic packet from the first VLAN region (In the upstream direction, when a tagged upstream packet arrives on a user-side port, **Davis *et al.***, paragraph [0098], lines 1 - 2); upon receiving the upstream packet: mapping in the VLAN Mapping Point, a VLAN tag for the first VLAN region to a VLAN tag for the second VLAN region (the OLT replaces the packet's local-significant VLAN tag with a network-significant VLAN tag, **Davis *et al.***, paragraph [0098], lines 2 - 5); and forwarding the upstream traffic packet to the core network using the VLAN tag for the second VLAN region (The OLT also selects an individual network-side port based on the network-significant VLAN

tag, **Davis *et al.***, paragraph [0098], lines 5 - 7); receiving in the VLAN Mapping Point, a downstream traffic packet from the second VLAN region (During operation, when a tagged downstream packet arrives on a network-side port, **Davis *et al.***, paragraph [0097], lines 1 - 2); upon receiving the downstream packet: extracting from the unicast downstream packet a destination Media Access Control (MAC) address and the VLAN tag for the second VLAN region (Upon receiving a downstream packet from a network-side port, the system searches a mapping table to determine whether one or more field values of the downstream packet correspond to any LLIDs or ports, **Davis *et al.***, paragraph [0016], lines 12 - 15); obtaining the VLAN tag for the first VLAN region from a table in the VLAN mapping point by matching the extracted MAC address and the VLAN tag for the second VLAN region to a corresponding VLAN tag for the first VLAN region (If the MAC destination address corresponds to an LLID which is among the group of LLIDs corresponding to the VLAN identifier, the system assigns the LLID to the downstream packet, **Davis *et al.***, paragraph [0021], lines 5 - 8); and forwarding the downstream traffic packet to the end user using the VLAN tag for the first VLAN region (and transmits the downstream packet to a remote node, **Davis *et al.***, paragraph [0021], lines 8 - 9); upon determining that the downstream traffic packet is a multicast packet: obtaining from the table, a common VLAN tag for all end users in the first VLAN region (the system maintains knowledge at the central node of all active multicast groups within the EPON, **Davis *et al.***, paragraph [0031], lines 1 - 3); and forwarding the downstream traffic packet to all end users in the first VLAN region using the

common VLAN tag for the first VLAN region (After receiving a multicast data packet, the OLT broadcasts the multicast packet to all ONUs within the EPON, **Davis *et al.***, paragraph [0097], lines 1 - 2).

Davis *et al.*, does not specifically teach determining whether the downstream traffic packet is a unicast packet or a multicast packet. However, determining whether the downstream traffic packet is a unicast packet or a multicast packet is inherent in **Davis *et al.***, because in paragraph [0037], **Davis *et al.***, teaches that "the system receives an upstream packet from a user at a remote node and detects the values of one or more fields of the upstream packet" and in paragraph [0034], **Davis *et al.***, teaches that "The system also receives a multicast packet at the central node on behalf of a number of remote nodes which are members of a multicast group, thus it would has been obvious to one of ordinary skill in the art that **Davis *et al.***'s system can distinguish between unicast packets and multicast packets.

DETAILED ACTION

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4.

Claims 21 – 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Davis *et al.*** (US 20050058118 A1) in view of the background of the invention.

Regarding **Claim** 21, **Davis *et al.*** teaches a method of providing multiple simultaneous services through a single broadband connection to an end user

(EPONs are capable of accommodating broadband voice, data, and video traffic simultaneously, **Davis *et al.***, paragraph [0006], lines 7 - 10), said end user being connected to a core network through first and second independently tagged Virtual Local Area Network (VLAN) regions (**Davis *et al.***, Figs 7 - 13), said method comprising the steps of: implementing a VLAN Mapping Point at a border between the first and second VLAN regions (OLT, **Davis *et al.***, FIG. 11, box 710), wherein the first VLAN region is on a first side of the VLAN Mapping Point toward the end user (User-side ports 731, 732, and 733 are coupled to ONU 1, ONU 2, and ONU 3, respectively, **Davis *et al.***, paragraph [0016], lines 7 - 12), and the second VLAN region is on a second side of the VLAN Mapping Point toward the core network (Network-side ports 721 and 722 are coupled to external networks, **Davis *et al.***, paragraph [0079], lines 2 - 3); receiving in the VLAN Mapping Point, an upstream traffic packet from the first VLAN region (In the upstream direction, when a tagged upstream packet arrives on a user-side port, **Davis *et al.***, paragraph [0098], lines 1 - 2); upon receiving the upstream packet: mapping in the VLAN Mapping Point, a VLAN tag for the first VLAN region to a VLAN tag for the second VLAN region (the OLT replaces the packet's local-significant VLAN tag with a network-significant VLAN tag, **Davis *et al.***, paragraph [0098], lines 2 - 5); and forwarding the upstream traffic packet to the core network using the VLAN tag for the second VLAN region (The OLT also selects an individual network-side port based on the network-significant VLAN tag, **Davis *et al.***, paragraph [0098], lines 5 - 7); receiving in the VLAN Mapping Point, a downstream traffic packet from the second VLAN region (During operation, when

a tagged downstream packet arrives on a network-side port, **Davis *et al.***, paragraph [0097], lines 1 - 2); upon receiving the downstream packet: extracting from the unicast downstream packet, a destination Media Access Control (MAC) address and the VLAN tag for the second VLAN region (Upon receiving a downstream packet from a network-side port, the system searches a mapping table to determine whether one or more field values of the downstream packet correspond to any LLIDs or ports, **Davis *et al.***, paragraph [0016], lines 12 - 15); obtaining the VLAN tag for the first VLAN region from a table in the VLAN mapping point by matching the extracted MAC address and the VLAN tag for the second VLAN region to a corresponding VLAN tag for the first VLAN region (If the MAC destination address corresponds to an LLID which is among the group of LLIDs corresponding to the VLAN identifier, the system assigns the LLID to the downstream packet, **Davis *et al.***, paragraph [0021], lines 5 - 8); and forwarding the downstream traffic packet to the end user using the VLAN tag for the first VLAN region (and transmits the downstream packet to a remote node, **Davis *et al.***, paragraph [0021], lines 8 - 9); upon determining that the downstream traffic packet is a multicast packet: extracting an aggregate VLAN tag from the multicast downstream packet (the system maintains knowledge at the central node of all active multicast groups within the EPON, **Davis *et al.***, paragraph [0031], lines 1 - 3); determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag (the system maintains knowledge at the remote node of all the users coupled to the remote node which are members of any active multicast group, **Davis *et***

al., paragraph [0031], lines 1 - 3); duplicating the downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag (Conventionally, each user joins a multicast group separately and receives an individual copy of the multicast data packet, **Davis *et al.***, paragraph [0101], lines 5 - 7); changing by the VLAN Mapping Point, the VLAN ID in each of the duplicated downstream traffic packets to include a different one of the associated VLAN tags for the first VLAN region (The OLT also replaces the network-significant VLAN tag with a local-significant VLAN tag before transmitting the downstream packet to the destination ONU, **Davis *et al.***, paragraph [0102], lines 6 - 8); and forwarding the duplicated downstream traffic packets to end users using the associated VLAN tags for the first VLAN region (After receiving a multicast data packet, the OLT broadcasts the multicast packet to all ONUs within the EPON, **Davis *et al.***, paragraph [0097], lines 1 - 2).

Davis *et al.*, does not specifically teach determining whether the downstream traffic packet is a unicast packet or a multicast packet. However, determining whether the downstream traffic packet is a unicast packet or a multicast packet is inherent in **Davis *et al.***, because in paragraph [0037], **Davis *et al.***, teaches that "the system receives an upstream packet from a user at a remote node and detects the values of one or more fields of the upstream packet" and in paragraph [0034], **Davis *et al.***, teaches that "The system also receives a multicast packet at the central node on behalf of a number of remote nodes which are members of a multicast group, thus it would has been obvious

to one of ordinary skill in the art that **Davis *et al.***'s system can distinguish between unicast packets and multicast packets.

Regarding **Claim** 22, **Davis *et al.*** teaches a wherein the first VLAN region is a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region is an aggregation network connecting a Layer 2 termination point to the VLAN Mapping Point (**Davis *et al.***, FIG. 11).

Regarding **Claim** 23, **Davis *et al.*** teaches a wherein the VLAN tag for the first VLAN region is a VLAN-per-user-per-service tag, and the VLAN tag for the second VLAN region is a VLAN-per-service tag (In translated-VLAN mode, the OLT translates an upstream packet's LLID and local-significant (usually non-unique) VLAN tag into a unique, network-significant VLAN tag, **Davis *et al.***, paragraph [0096], lines 6 - 9).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Davis *et al.*** (US 20050058118 A1).

Regarding **Claim** 24, **Davis *et al.*** teaches a Virtual Local Area Network (VLAN) Mapping Point implemented at a border between first and second independently tagged VLAN regions (**Davis *et al.***, FIGs 7 – 13, box 710),

wherein the first VLAN region is on a first side of the VLAN Mapping Point toward an end user, and the second VLAN region is on a second side of the VLAN Mapping Point toward a core network (the number of ports on the switch are divided into network-side ports and user-side ports, **Davis *et al.***, paragraph [0016], lines 7 - 12), said VLAN Mapping Point comprising: a first interface for receiving upstream traffic packets from the first VLAN region, and for sending downstream traffic packets to the first VLAN region (User-Side Port, **Davis *et al.***, FIG. 11, box 731); a second interface for receiving downstream traffic packets from the second VLAN region, and for sending upstream traffic packets to the second VLAN region (Network-Side Port, **Davis *et al.***, FIG. 11, box 721); and a mapping function connected to the first and second interfaces that, upon receiving from the first interface an upstream traffic packet that includes a VLAN tag for the first VLAN region, maps the VLAN tag for the first VLAN region to a VLAN tag for the second VLAN region (In the upstream direction, when a tagged upstream packet arrives on a user-side port, the OLT replaces the packet's local-significant VLAN tag with a network-significant VLAN tag, **Davis *et al.***, paragraph [0098], lines 1 - 5), and sends the mapped upstream traffic packet to the second interface (The OLT also selects an individual network-side port based on the network-significant VLAN tag, **Davis *et al.***, paragraph [0098], lines 5 - 7), and, upon receiving from the second interface a downstream traffic packet that includes a VLAN tag for the second VLAN region (when a tagged downstream packet arrives on a network-side port, **Davis *et al.***, paragraph [0097], lines 1 - 2), maps the VLAN tag for the second VLAN region to a VLAN tag for the first VLAN

region (The OLT also replaces the network-significant VLAN tag with a local-significant VLAN tag, **Davis *et al.***, paragraph [0097], lines 5 - 6) and sends the mapped upstream downstream traffic packet to the first interface (transmitting the downstream packet to the destination ONU, **Davis *et al.***, paragraph [0097], lines 6 - 7), wherein the mapping function includes: a mapping table that matches VLAN tags for the first VLAN region to associated VLAN tags for the second VLAN region, (When an upstream packet with MAC destination address DA2 and LLID 2 arrives on user-side port 732, bridge 715 searches a mapping table for a network-side port that corresponds, **Davis *et al.***, paragraph [0080], lines 1 - 4) and matches VLAN tags for the second VLAN region to associated VLAN tags for the first VLAN region (When a downstream packet with MAC destination address DA1 arrives on network-side port 722, bridge 715 searches a mapping table for an LLID that corresponds to DA1, **Davis *et al.***, paragraph [0079], lines 5 - 8); means for extracting a destination Media Access Control (MAC) address from the unicast downstream packet (the system searches the mapping table to determine whether the MAC destination address of the downstream packet corresponds to an LLID or a port, **Davis *et al.***, paragraph [0020], lines 3 - 5); means for obtaining the VLAN tag for the first VLAN region from the mapping table by matching the extracted MAC address to a corresponding VLAN tag for the first VLAN region (if the VLAN identifier of the downstream packet corresponds to a group of LLIDs, the system searches the mapping table to determine whether the MAC destination address of the downstream packet corresponds to an LLID, **Davis *et al.***, paragraph [0021], lines 1 - 5); and means

for forwarding the downstream traffic packet to the end user using the VLAN tag for the first VLAN region (the system assigns the LLID to the downstream packet and transmits the downstream packet to a remote node, **Davis *et al.***, paragraph [0021], lines 7 - 9); responsive to determining that the downstream traffic packet is a multicast packet: means for obtaining from the mapping table, a common VLAN tag for all end users in the first VLAN region (the system maintains knowledge at the central node of all active multicast groups within the EPON, **Davis *et al.***, paragraph [0031], lines 1 - 3); and means for forwarding the downstream traffic packet to all end users in the first VLAN region using the common VLAN tag for the first VLAN region (After receiving a multicast data packet, the OLT broadcasts the multicast packet to all ONUs within the EPON, **Davis *et al.***, paragraph [0097], lines 1 - 2).

Davis *et al.*, does not specifically teach means for determining whether a received downstream traffic packet is a unicast packet or a multicast packet; However, means for determining whether a received downstream traffic packet is a unicast packet or a multicast packet is inherent in **Davis *et al.***, because in paragraph [0037], **Davis *et al.***, teaches that "the system receives an upstream packet from a user at a remote node and detects the values of one or more fields of the upstream packet" and in paragraph [0034], **Davis *et al.***, teaches that "The system also receives a multicast packet at the central node on behalf of a number of remote nodes which are members of a multicast group, thus it would has been obvious to one of ordinary skill in the art that **Davis *et al.***'s system can distinguish between unicast packets and multicast packets.

DETAILED ACTION

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of

35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Davis *et al.*** (US 20050058118 A1) in view of the background of the invention.

Regarding **Claim** 29, **Davis *et al.*** teaches a Virtual Local Area Network (VLAN) Mapping Point implemented at a border between first and second independently tagged VLAN regions (**Davis *et al.***, FIGs 7 – 13, box 710), wherein the first VLAN region is on a first side of the VLAN Mapping Point toward an end user (User-side ports 731, 732, and 733 are coupled to ONU 1, ONU 2, and ONU 3, respectively, **Davis *et al.***, paragraph [0016], lines 7 - 12), and the second VLAN region is on a second side of the VLAN Mapping Point toward a core network (Network-side ports 721 and 722 are coupled to external networks, **Davis *et al.***, paragraph [0079], lines 2 - 3), said VLAN Mapping Point comprising: a first interface for receiving upstream traffic packets from the first VLAN region, and for sending downstream traffic packets to the first VLAN region (User-Side Port, **Davis *et al.***, FIG. 11, box 731); a second interface for receiving downstream traffic packets from the second VLAN region, and for sending upstream traffic packets to the second VLAN region (Network-Side Port, **Davis *et al.***, FIG. 11, box 721); and a mapping function connected to the first and second interfaces that, upon receiving from the first interface an upstream traffic packet that includes a VLAN tag for the first VLAN region, maps the VLAN tag for the

first VLAN region to a VLAN tag for the second VLAN region (In the upstream direction, when a tagged upstream packet arrives on a user-side port, the OLT replaces the packet's local-significant VLAN tag with a network-significant VLAN tag, **Davis *et al.***, paragraph [0098], lines 1 - 5), and sends the mapped upstream traffic packet to the second interface (The OLT also selects an individual network-side port based on the network-significant VLAN tag, **Davis *et al.***, paragraph [0098], lines 5 - 7), and, upon receiving from the second interface a downstream traffic packet that includes a VLAN tag for the second VLAN region (when a tagged downstream packet arrives on a network-side port, **Davis *et al.***, paragraph [0097], lines 1 - 2), maps the VLAN tag for the second VLAN region to a VLAN tag for the first VLAN region (The OLT also replaces the network-significant VLAN tag with a local-significant VLAN tag, **Davis *et al.***, paragraph [0097], lines 5 - 6), and sends the mapped downstream traffic packet to the first interface (transmitting the downstream packet to the destination ONU, **Davis *et al.***, paragraph [0097], lines 6 - 7), wherein the mapping function includes: a mapping table that matches VLAN tags for the first VLAN region to associated VLAN tags for the second VLAN region (When an upstream packet with MAC destination address DA2 and LLID 2 arrives on user-side port 732, bridge 715 searches a mapping table for a network-side port that corresponds, **Davis *et al.***, paragraph [0080], lines 1 - 4), and matches VLAN tags for the second VLAN region to associated VLAN tags for the first VLAN region (When a downstream packet with MAC destination address DA1 arrives on network-side port 722, bridge 715 searches a mapping table for an LLID that corresponds to DA1, **Davis**

et al., paragraph [0079], lines 5 - 8); means for extracting a destination Media Access Control (MAC) address from the unicast downstream packet (the system searches the mapping table to determine whether the MAC destination address of the downstream packet corresponds to an LLID or a port, **Davis *et al.***, paragraph [0020], lines 3 - 5); means for obtaining the VLAN tag for the first VLAN region from the mapping table by matching the extracted MAC address to a corresponding VLAN tag for the first VLAN region (if the VLAN identifier of the downstream packet corresponds to a group of LLIDs, the system searches the mapping table to determine whether the MAC destination address of the downstream packet corresponds to an LLID, **Davis *et al.***, paragraph [0021], lines 1 - 5); and means for forwarding the downstream traffic packet to the end user using the VLAN tag for the first VLAN region (the system assigns the LLID to the downstream packet and transmits the downstream packet to a remote node, **Davis *et al.***, paragraph [0021], lines 7 - 9); responsive to determining that the downstream traffic packet is a multicast packet means for extracting an aggregate VLAN tag from the multicast downstream packet (the system maintains knowledge at the central node of all active multicast groups within the EPON, **Davis *et al.***, paragraph [0031], lines 1 - 3); means for determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag (the system maintains knowledge at the remote node of all the users coupled to the remote node which are members of any active multicast group, **Davis *et al.***, paragraph [0031], lines 1 - 3); means for duplicating the downstream traffic packet for each of the entries

in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag (Conventionally, each user joins a multicast group separately and receives an individual copy of the multicast data packet, **Davis *et al.***, paragraph [0101], lines 5 - 7); means for replacing the VLAN ID in each of the duplicated downstream traffic packets with a different one of the associated VLAN tags for the first VLAN region (The OLT also replaces the network-significant VLAN tag with a local-significant VLAN tag before transmitting the downstream packet to the destination ONU, **Davis *et al.***, paragraph [0102], lines 6 - 8); and means for forwarding the duplicated downstream traffic packets to end users using the associated VLAN tags for the first VLAN region (After receiving a multicast data packet, the OLT broadcasts the multicast packet to all ONUs within the EPON, **Davis *et al.***, paragraph [0097], lines 1 - 2).

Davis *et al.*, does not specifically teach means for determining whether a received downstream traffic packet is a unicast packet or a multicast packet; However, means for determining whether a received downstream traffic packet is a unicast packet or a multicast packet is inherent in **Davis *et al.***, because in paragraph [0037], **Davis *et al.***, teaches that "the system receives an upstream packet from a user at a remote node and detects the values of one or more fields of the upstream packet" and in paragraph [0034], **Davis *et al.***, teaches that "The system also receives a multicast packet at the central node on behalf of a number of remote nodes which are members of a multicast group, thus it would has been obvious to one of ordinary skill in the art that **Davis *et al.***'s system can distinguish between unicast packets and multicast packets.

Regarding **Claim** 30, **Davis *et al*.** teaches a VLAN Mapping Point wherein the first VLAN region is a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region is an aggregation network connecting a Layer 2 termination point to the VLAN Mapping Point (**Davis *et al*.**, FIG. 11).

Regarding **Claim** 31, **Davis *et al*.** teaches a VLAN Mapping Point wherein the VLAN tag for the first VLAN region is a VLAN-per-user-per-service tag, and the VLAN tag for the second VLAN region is a VLAN-per-service tag (In translated-VLAN mode, the OLT translates an upstream packet's LLID and local-significant (usually non-unique) VLAN tag into a unique, network-significant VLAN tag, **Davis *et al*.**, paragraph [0096], lines 6 - 9).

Response to Arguments

9. Applicant's arguments with respect to claims 15 – 36 in the remarks dated 09/25/2009 have been considered but are moot in view of the new ground(s) of rejection. Applicant argues that McCloghrie does not teach or suggest a method as recited in amended claim 15, or a VLAN mapping point as recited in claim 24, in which the VLAN mapping point maps VLAN tags between VLANs, and provides different mapping dependent upon whether a received packet is a unicast packet or a multicast packet. Applicant further argues that Shankar

teaches away from an aggregate VLAN tag associated with multiple users. In light of Applicant's amendments, Examiner has provided newly cited prior art rendering applicant's arguments moot in view of new grounds of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIONEL PREVAL whose telephone number is (571) 270-5673. The examiner can normally be reached on Monday - Thursday 10:00AM - 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dang Ton can be reached on (571) 272-3171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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